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Substitute spec.
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PATENT

SUBSTITUTE SPECIFICATION

METHOD FOR MONITORING THE FUNCTION OF AN NO_x SENSOR ARRANGED IN AN EXHAUST GAS CHANNEL OF AN INTERNAL COMBUSTION ENGINE

Background of Invention

[0001] The invention relates to a process for monitoring the function of an NO_x sensor arranged in an exhaust duct of an internal combustion engine. To reduce the emission of pollutants from an internal combustion engine, a known practice is to arrange suitable catalysts in the exhaust gas duct of the engine. The catalyst collects pollutants, such as CO, HC or H₂ that can act as reducing agents and be oxidized by atmospheric oxygen. These reducing agents may also react with the NO_x, produced during the combustion process in the engine, to form nitrogen.

[0002] If the engine is operating in a lean mode the proportion of oxygen in the air-fuel mixture is increased, which is more favorable to combustion, and as a consequence the proportion of the reducing agents in the exhaust will decrease. In this case, an adequate reaction of NO_x on the catalyst will no longer be ensured. As a remedy, an NO_x reservoir may be arranged in the exhaust duct and combined with the catalysts to make an NO_x storage catalyst. The NO_x storage catalyst will absorb NO_x if the NO_x desorption temperature is not exceeded or until the NO_x storage capacity is reached. Prior to reaching its storage capacity, the system will have to change to a regeneration mode to regenerate the NO_x storage catalyst by a period of rich operation, and prevent NO_x emission.

[0003] To determine whether regeneration is necessary the NO_x concentration downstream from the NO_x storage catalyst may be detected with an NO_x sensor. A disadvantage of this, however, is that if the NO_x sensor malfunctions, high NO_x emissions may occur, or NO_x may be unnecessarily consumed during a premature regeneration. The object of the present invention is